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E: ISSN NO.: 2455-0817 *Remarking An Analisation*

Evaluation of tissue glycogen due to toxicity of kinadon in the fresh water fish, *Channa Punctatus* (Bloch.)

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Abstract

The Toxicity of Kinadon in the liver of *Channa punctatus* (Bloch.) was studies.Alteration in Behavioral Patterns and histopathology of kidney and liver were studies in Channa punctatus. The exposed fish displayed erratic swimming and become lethargic. The interrenal cells of the head kidney exhibited distinct hypertrophy and vacuolization. The liver hepatocytes showed cytoplasmic vacuolization with the lateral nuclei arrangement.The result showed that acute toxicity severely affects the vital organs and normal behavior which may be deleterious for fish population.

The freshwater fish are an important source of animal protein to human population. They are adversely affected by aquatic pollutanst, such as pesticides used in agricuiture, which are easily washed off into the water bodies.

The effect may be direct when the pesticide is absorbed into the body through the skin, gill, intestine, wound etc. It may be indirect when the pesticide alters the quality of the water, such as depletion of dissolved oxygen. The toxicity of kinadon in the tissue liver of *Channa punctatus* (Bloch.) was studied.

Keywords: Mastigocladus, Anabanea, Arsenic, Acute Toxicity Effect, Behaviora L Effects, Histopathology, Liver, *Channa Punctatus*.

Introduction

Channa is a genus of fish in the family Channidae, commonly known as snakeheaded, native to Asia. This genus contains more than 35 scientifically described species, but the most well known are probably the northern snakeheaded (*Channa argus*) and the giant snakeheaded (*Channa micropeltes*). A apart from their importance as a food fish,snakeheaded are also consumed as a therapeutic for wound healing as well as reducing post-operative pain and discomfort and collected for the international aquarium pet trade .The diets of various species of Channa include fish, frogs,snakes, rodents, birds and insects.

With the modernization of agricultural operations and rapid growth of industrial activities, there has been tremendous increase in the production and uses of pesticides .Incidence of fish mortality have been reported from different parts of the world due to insecticidal treatment of the agricultural crops. Some pesticides such as the organochlorine, organophosphate with their inherent chemical stability and aquatic nature present a further problem in the assessment of toxicity.

Length of head is 3.2-3.5 of total length and 2.7 of standard length (Rahman, 1989). Eyes comparatively of small size and located on the anterior of head. Two pairs of nostril are found at the anterior superior angle of the eyes. Lower jaw is slightly protruding. Teeth on lower jaw are conical .Barbells are absent .Scales are large and on head irregular .Pectoral fin position is a little above the pelvic fin and caudal fin long and rounded .Body colour in live brown on the back, fading to lighter beneath, not spotted or straited. According the Bhuiyan (1964), maximum length is 30cm whereas Rahman (1989) reported this fish attains over 240mm in total length. The fishes are the most sensitive of all the aquatic animals towards such pollutants.The fish easily, gets its tissues damaged due to water pollutants. Although pollution of the rivers and lakes by industrial effluents is known to damage the aquatic species, the effect of specific chemicals and the physiological variations caused by them are not yet well established.

Aim of the Study

The aim of present study is to determine in detail the toxicity of an organophosphorous pesticide kinadon on certain organs like kidney of a fish *Channa punctatus* (Bloch.).

In the present study is to investigate the changes in biochemical parameters and tissues exposed to intoxicant kinadon.

Materials and Methods

The freshwater ai r -breathing *Chaana punctatus* (Bloch.), ranging from 10-12cms in length and 40-50grams in weight were collected from the local market .The fishes were collected during April and May when room temperature ranging from 27 °C to 31 °C and water temperature from 20 °C to 25°C .They were acclimated to the laboratory conditions for 10days before starting the experiment .They were stored in large glass aquaria measuring 75 X 37.5X 37.5cm. and fed on small pieces of liver and fishes dead and were fed with commercially available fish food. The Channa fishes were killed under light chloroform anaesthesia. They are dissected carefully and was taken out and weighted for the biochemical estimation of glycogen. According to Bhatti (1934), *C*.*punctatus* burrows in mud and prefers stagnant and muddy to running waters. It is carnivorous. It constructs a nest of floating weeds, moves over ground from pool to pool. It is voracious and predatory to small fish and fries.

Observations

In the present investigation on the toxicity of an organophosphorous intoxicant, kinadon on biochemical parameters of the serum tissue of *Channa* punctatus (Bloch.) has been studied. In order to estimate the LC50 the fish of different experimental sets have been treated with different dose of kinadon . The survival percentage showed a corresponding decrease with the increasing dose of kinadon.

Results

The homogenized tissue glycogen in the control group ranged between 0.04 to 0.05 with an average of 0.046mg/dl in the liver. The homogenized tissue glycogen after intoxicant of kinadon at 1 day it ranged from 0.16 to 0.25 with an average of 0.201mg/dl and after 7 days it ranged from 0.06 to 0.10 with an average of 0.86mg/dl, after 14 days it ranged from 0.02 to 0.03 with an average of 0.026mg/dl, after 21 days it ranged from 0.16 to 0.02 with an average of 0.012mg/dl,while after 28 days it ranged from 0.08 to 0.12 with an average of 0.108mg/dl; and after 45 days it ranged from 0.06 to 0.12 with an average of 0.09mg/dl. The increase in homogenized tissue glycogen was very highly significant ($p<0.001$) after exposure time 7 days,28 days and 45 days,while the decrease in the glycogen is very highly significant ($P<0.001$),after exposure time of kinadon at 14 days and 21 days . A non-significant after result was obtained after exposure time of kinadon of 1 day,at the 15 ppm sub-lethal concentration in the kidney.

Table 1 : Effect of 15 ppm Kinadon Toxicity on the Tissue Glycogen *Channa punctatus* (Bloch.)

No. of fishes	Tissues	Exposure time in Days							
			Control	1 day	7 day	14 day	21 day	28 day	45 day
6	Liver	Range	0.04-0.05	0.16-0.25	0.06-0.10	0.02-0.03	0.016-0.02	0.08-0.12	0.06-0.12
		Mean	0.046±0.002	. 0.201±0.015	*** 0.086±0.005	*** 0.026±0.002	*** 0.012±0.001	*** 0.108±0.007	*** 0.09±0.007

Values are in mg/150 mg of body weight.
Values are mean ± S.E. of six observations.
Values are significant at ***P < 0.001 and **.** Non significant (N.S.)

Discussion

The experiments were carried out on the toxicity of kinadon in the kidney of *Channa punctatus* (Bloch.) in the laboratory. A decrease in muscle glycogen content was more marked after 96 hrs. while the decrease was in significant in the case of kidney .Similar findings of decrease in kidney glycogen was reported in *Carrassius auratus* chronically exposed to endrin. However, in the present study,a decrease in homogenized tissue kidney glycogen is decreasing with an increase of exposure time to kinadon was highly significant($P<0.001$).

An increase in blood glucose level and decrease in tissues (liver, gill, muscle, heart and kidney) glycogen levels in *Heteropneustes fossilis* and *C .batrachus* after exposure to industrial effluents. An increase of glycogen in the liver and a decrease in muscle was observed in flounder exposed to various concentrations of cadmium. The present study showed that tissue glycogen decrease with an increase to the exposure time of kinadon which is non-significant and very highly significant($P<0.001$).

Conclusion: The present study showed a significant decreasing trend in liver glycogen with the increasing time exposure of kinadon. The decrease in the glycogen level with an increase the exposure time of kinadon is highly significant, at the 15 ppm sub-lethal concentration. Thus, the indication of proteolysis and decrease of metabolic activities is clearly showed a significant decrease in all metabolic activities.

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